# EXHIBIT 21
## [UNREDACTED in the PUBLIC RECORD]

| From: | Dave Rollings <dave.m.rollings@seagate.com> |
|---|---|
| Sent: | Monday, January 26, 2015 9:42 AM |
| To: | Ramin Esmailzadeh <ramin.esmailzadeh@seagate.com> |
| Cc: | Tom Barrett <tom.barrett@seagate.com>; Ronald E Lane <ronald.e.lane@seagate.com>; George R Berry <george.r.berry@seagate.com> |
| Subject: | Re: More Backblaze today |
| Attach: | BackBlaze - Full serials with Externals identified (Retail Names).xls |

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Ramin,

**BLUF**: Backblaze update Jan 2015:  With additional recap on some older but pertinent information.

There have been two recent articles/blogs from authors using Backblaze data and comments.
1. Comparing Seagate Makara DT ST6000DX000 FW CC46 (Retail Box version STBD6000100)  with WD 6TB RED and Hitachi 6TB He.
http://www.storagenewsletter.com/rubriques/hard-disk-drives/for-6gb-hdds-wd-better-than-seagate-hgst-8tb-helium-unit-too-expensive/
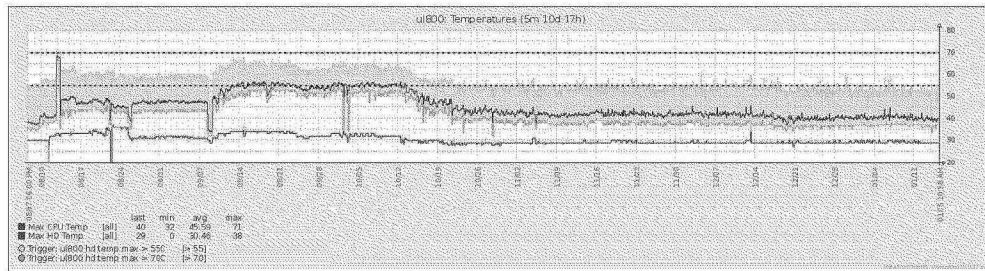
2. This one re-hashes the same data from CY14 which show the issue with the 3TB Grenada.  I am sure we have not seen the last of this slide.  It will live a long life.  Even though Backblaze has purged the 3TB from there servers this data will not go away.
http://arstechnica.com/information-technology/2015/01/hard-disk-reliability-examined-once-more-hgst-rules-seagate-is-alarming/

Update on 1.
This was a drive performance study done by Backplaze about a month ago where Backblaze took the Seagate Makara DT ST6000DX000 FW CC46 (Retail Box version STBD6000100) and compared it with WD 6TB RED and Hitachi 6TB He.  It showed our the Seagate 6TB  took 10 days longer to fill the sever with customer data over WD and Hitachi.

In looking into this issue it looked like a good probability that it was due to the RAW threshold of 40C in FW CC46.  But, Backblaze pulled temp profile data of sever used int he test with the Seagate and it showed temps below 40C.  See below

The above shows a max of 38C. This server went live on 9/12 and took about 5 weeks to fill up. During that time you can see the drive temperature rarely went above 35C.

Next steps:
1. I am seeing if backblaze will let me pull the SM2 and UDS on a sample of drives from the test pod to validate the temp profiles to be sure we did not see over 40C temps that would explain the poor performance.
2. I am working with the core team to see if they have any other possible explanations.
3. I have provided CC48 FW to Backblaze they will at some point update all the drives to get the RAW ref temp up to 60C and avoid the issue.

4. Drive info
Makara DT
Max OD read (MB/s) 216MB
Ave Read /Write is 154 MB/s
Cache 128MB
12H / 6D    512e
FW CC48    (Note CC47 had RAW set at 40C)  fixed in CC48
BER is lower vs Makara NL.   This drive uses the drives with Heads below the BER limit.
Uses a more agressive DOS to compensate for lower BER.
Added some cmd overhead to slow the drive down a bit more.

**FYI performance specs:**
Makara NL(7200 RPM)
Sustained data transfer rate OD (MB/s max)216 (226 MB/s max)

Lombard DT  (
Maximum sustained data rate, OD read (MB/s) 180MB/s 180MB/s

Issue 2.   This is the same failure info we have been seeing different people blog on using this same Backblaze data.
Backblaze has removed all the Grenada drive from its population so this data will not change but its history looks to live on.
3TB have been removed.  Some 1.5 are still running.  The backbaze population is mostly 4 and 6TB
Note: Backblaze is once again pushing drives failing in their systems though the Disc Depot.
We should have good data on current population failures int he near future if they keep using the

depot. They had stopped for a while but have decided it is a good tool and are reengaged.

Additional comments:
1. Regarding the 3TB Grenada.
a. Of the SNs we have 50% of the 3TB drives have come from external USB drives with the balance coming form retail stores and the channel as bare drives. (Data Attached)
b. I am not aware of a RAW issues on Grenada. It should be set correctly to 60C and not be and issue but I will double check. Also, not backblaze runs mostly below 40C. . Our own FA on a sample of drives pointed to Grenada / Seagate issues.

We have 3531 3TB Serial numbers:   Of those 1752 were purchased as Bare drives and 1779 are Retail external USB drives.

Population Break Down

| # of Drives | MFG date | Product. |
|---|---|---|
| 2 – | Feb 2013 | Grenda BP |
| 2- | March 2013- | Grenda BP |
| 2- | Dec 2012 | Grenda BP |
| 108 - | Nov 2012 | Grenda BP |
| 281 – | Oct 2012 – | Grenda BP |
| 947 – | Aug/July 2012 | Grenada |
| 723 – | June/May 2012 | Grenada |
| 267 – | April / March 2012 | Grenada |
| 634 – | Feb / Jan 2012 | Grenada |
| 125 – | June – Dec 2011 | Grenada |

 We know early 2012 vintage Grenada has a 2x Field return rate over current drives based on Standard OEM field data (Feb-June 2012 RR on All OEM was ~0.7% vs. Oct-Nov 2013 RR of 0.3% on Grenada BP). This is due to a multitude of issues, including particle improvement mitigation actions, an improved air bearing design (internal) on Grenada BP, FW fixes etc. (Red- being worst group)

2. . External USB drives / Cracked drives:

a, From what I have been able to figure out the majority of crack boxes came from the

flood era.

b. They are using no external cracked drives in current buys in the past 2 years that I can see.

c. Supect most of the 15 TB came from external

 d. I do not have a complete list of SNs that have been in a back blaze system.  Which would really answer the question being asked on the overall over time exposure to Cracked external drives..  I have put in requests just have not got it.  We know through backblaze's own admission they bought and sustained there business on buying and cracking USB External drives during the floods.  This does account for a lot of that 1.5GB high failure rate that may never get removed..

as well as 50% of the SN we have on the. 3TB

3. They are currently focused on 6TB but did buy  Lombard 4TBs but no externals any longer per Tim Nufire at Back Blaze

4.  Small TAM still.


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On Fri, Dec 19, 2014 at 8:18 PM, Ronald E Lane <ronald.e.lane@seagate.com> wrote:

> Thanks Dave.  If you could talk to LCO and find out how the Makara "Desktop" performance compares to the NL version, and also to GrenadaBP, prior to our call on Monday, that would be great.  Intent of our call Monday is to put together some kind of rebuttal to the Backblaze article.
>
> Thanks,
> Ron
>
> Sent from my iPad
>
> On Dec 19, 2014, at 3:54 PM, Dave  Rollings <dave.m.rollings@seagate.com> wrote:
>
> Ron,

I confirmed the following:

1. This Makra DT is **only** sold in our Retail kits. (STBD6000100) as shown in my previous email.
2. We have been shipping since  March/April 14 in the retail channel.

Note:  I have asked Mike Carlow (AE in Longmont) for drive performance data for this ST6000DX000 drive.
Since this is a Makara I would think it would be a higher performer over WD RED.   But it is different FW CC45 vs SN02 and at this time I
do not understand the key differences.  I rarely come across retail drives.  Just a guess, but I know our Makara SATA drives do lag a bit in seq work loads that have an intermix of randoms.  This is being addressed in Makakra NL FW SN03.  It is just one possibility if the Firmwares correlate closely.  I know our competitors do not see this issue.

Regards,
dave


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On Thu, Dec 18, 2014 at 2:50 PM, Dave Rollings <dave.m.rollings@seagate.com> wrote:

Ron,
The STBD6000100 is our retail kit for internal bare drives as Ramin states.

This kit has a Makara DT drive with FW CC45, power and interface cable in a Retail Box (See Pics below).  To my knowledge we only sell this drive in our Retail boxes.  But I will see if I can confirm with Keith Myres and Mike Carlow in Longmont.  It would appear Backblaze has purchased a ligament desktop drive and it is a Makara with DT FW.  I do recall hereing the FW is quite drummed down to protect NL

From what I can see these retail kits have been available for some time.  Also, this retail kit STB6000100 on defines the capacity point not the drive model inside.  For now we only have the Makara as the SMC class of drives are yet up to DT performance standards.

Also, just to reiterate you comments Ramin, we have not, via our sales team, sold Backblaze any 6Ts Makara drives.  They have had no interest in a NL drive.  They are

100% DT drives.
Note:   They tend to buy these days from the Amazon type companies.

In the box
3.5" internal drive (note: screw spacing is off, no center hole, read review comments)
* 6 tcrabytcs (singlc disk, six 1TB plattcrs)
* 7200rpm
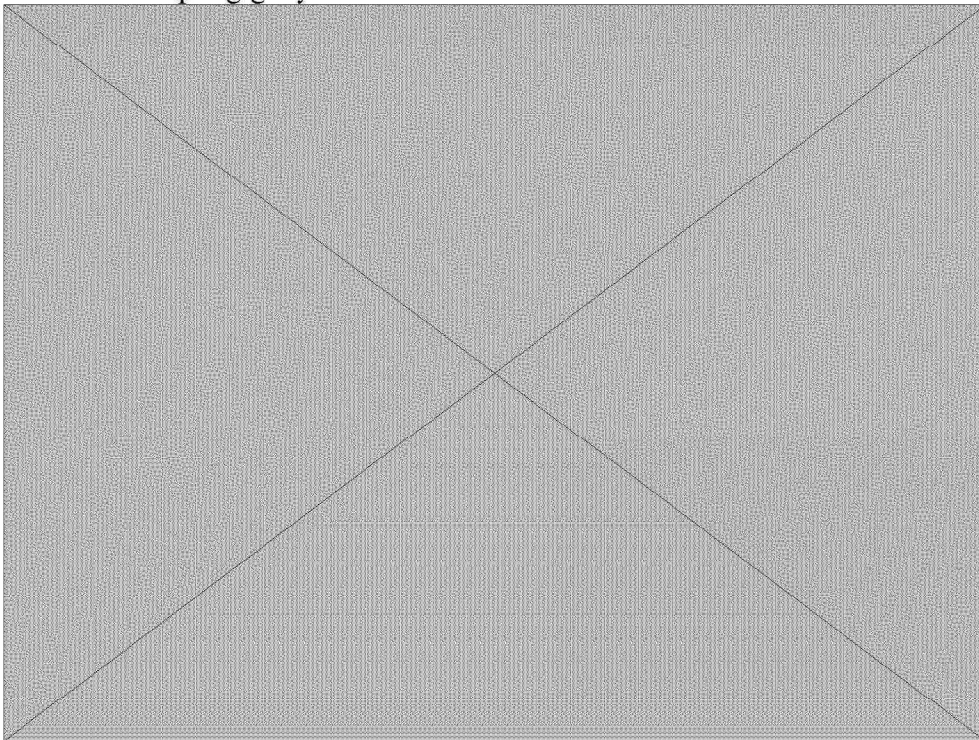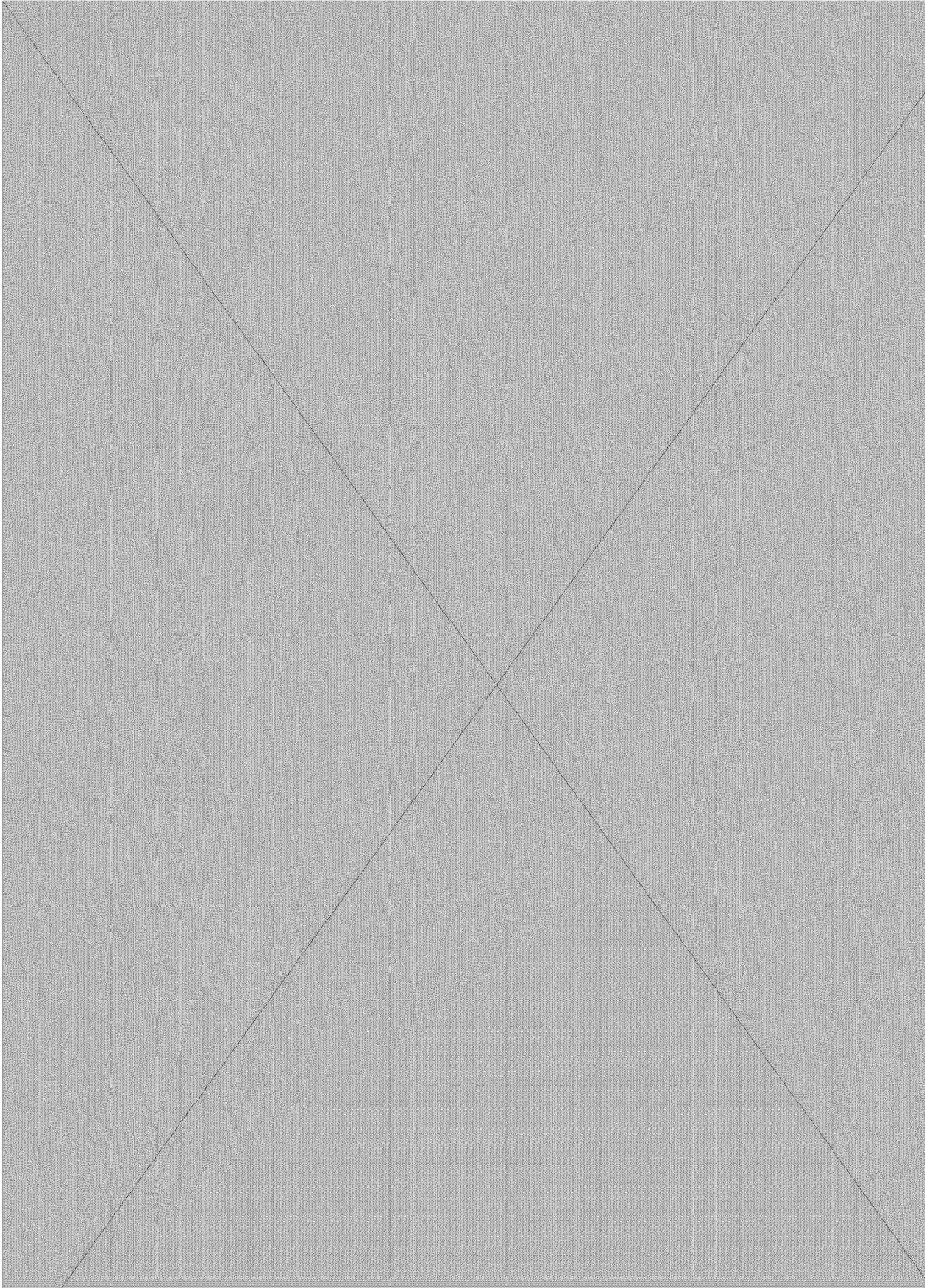* 128mb cache
* 6 Gb/s SATA interface (backwards compatible with 3 Gb/s)
* Usable with non-UEFI Bios (using Seagate Disk Wizard software for 3TB+ drives in Windows, including XP support)
* 2-year parts & labor warranty
* $0.05 cents per gigabyte

http://www.newegg.com/Product/Product.aspx?Item=N82E16822178520

Regards,
dave

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On Thu, Dec 18, 2014 at 1:04 PM, Ronald E Lane <ronald.e.lane@seagate.com>
wrote:

> Ramin,
>
> My point is that I don't think we have a 6TB Desktop. Grenada and Lombard both
> max out at 4TB, and Crawford is 5TB.  So are they using some kind of
> waterfalled Makara?  What did we give them?
>
> Thanks,
> Ron
>
> Sent from my iPad
>
> On Dec 18, 2014, at 12:37 PM, Ramin Esmailzadeh
> <ramin.esmailzadeh@seagate.com> wrote:
>
>
> Dave,
>
> Per our discussion this morning, please provide the latest update from your side
> on Backblaze especially on the 6TB.
>
> My understanding is that their request and want is 6TB desktop. They are
> insisting that they can make 6TB desktop work, and they are not interested in NL
> and/or NAS 6TB.
>
> Per Sales, at the moment Backblaze is pricing out the 4TBs (their requirement at
> the moment is for 1200 units of 4TBs).  They will take 6TB desktop if they can
> get the pricing.
>
> Look forward to your update Dave.

Thanks,
Ramin
Ramin Esmailzadeh   |   Director, Customer Technical Support   |   Seagate, Cupertino CA
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On Thu, Dec 18, 2014 at 12:07 PM, Ronald E Lane
<ronald.e.lane@seagate.com> wrote:

> Ramin/Dave,
>
> Do we know what 6TB drive they have from us?  As far as I know, the only
> 6TB drive we have is Makara, and that should blow the doors off WD Red
> from a performance standpoint.  Can you look at the p/n's shown in the
> article?  Also, what is latest status from an engagement standpoint?
>
> Thanks,
> Ron
>
> Sent from my iPad
>
> Begin forwarded message:
>
> **From:** Scott Horn <scott.horn@seagate.com>
> **Date:** December 18, 2014 at 11:13:49 AM PST
> **To:** Ronald E Lane <ronald.e.lane@seagate.com>, Bill Swales
> <bill.swales@seagate.com>, BS Teh <BS.Teh@seagate.com>
> **Cc:** Clive J Over <clive.j.over@seagate.com>, Kurt D Richarz
> <kurt.d.richarz@seagate.com>, Joel Hagberg <joel.hagberg@seagate.com>,
> Sai S Varanasi <sai.s.varanasi@seagate.com>, Michael R Crump
> <michael.r.crump@seagate.com>, Helen Farrier
> <helen.farrier@seagate.com>
> **Subject: Re: More Backblaze today**
>
> Adding Bill - I know they've asked for a bid on Systems.  Bill, do we
> have any momentum with them we can talk about publicly?
>
> We have a PR response we're going to use reactively.
>
> My suggestion - we go win their business if we care that much about
> them.  Go seed them with SMR drives (which they want).  Go give
> them NAS HDD drives - so they use those in comparison on Red vs.
> Desktop.
>
> We can be frustrated - but that isn't going to do much.  We also don't

want to get into a mud-slinging contest with them publicly - all it does is draw more attention to it.

## WHO OWNS THE ACCOUNT?

Scott

On Thu, Dec 18, 2014 at 11:09 AM, Ronald E Lane <ronald.e.lane@seagate.com> wrote:

> This came up on my main Yahoo news feed today. WD has to be paying
> these guys off. Even when we don't have a single failure, or error,
> they find a way to state that WD is better. I have not researched
> p/n's to see what they are actually using here, but they state that
> they are comparing our 6TB 7200 rpm "Desktop" drive with WD's 6TB 5400
> rpm Red drive. In this particular study, it looks like they included
> HGST 4TB drives as well, and the chart shows they perform best of
> all,,, but barely a mention.
>
> http://www.citeworld.com/article/2860704/cloud-computing/cloud-provider-pits-6tb-hard-drives-in-real-world-face-off.html
>
> Ron
>
> Sent from my iPad